



ATTACHMENT A

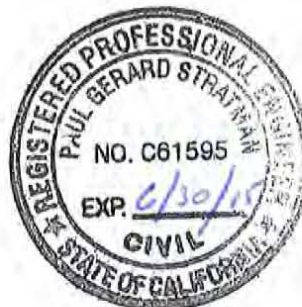
MEMORANDUM

TO: Fred Ganster, Exide Technologies

FROM: Paul G. Stratman, P.E. *PGS*

DATE: April 30, 2014

RE: Responses to Comments, DTSC Letter Dated April 23, 2014



Advanced GeoServices is providing these responses to DTSC's April 23, 2014 comments on the "Response to April 4, 2014 Comment, Addendum to the November 15, 2013 Work Plan for the Off-Site Soil Sampling, Exide Technologies, Vernon, CA" dated April 11, 2014.

For your convenience, DTSC's comment is provided in bold followed by our response:

Comment: **RE: Response to DTSC Comment A** - DTSC continues to regard the sampling and testing of lead-based paint (LBP) to be a discretionary activity that should be based solely on private conversations between the homeowner and the Los Angeles County Department of Public Health. DTSC finds Exide's response that the Long Beach background area is not comparable to the Vernon area to be inconsistent with Exide's prior positions, as it was Exide's own contractor that chose this background area based on its similarities to the residential areas surrounding Exide and its juxtaposition to similar industrial contributors. Specifically, in the approved November 13, 2013 work plan, Exide's own contractor selected the background area "on the basis of proximity to major freeways, a historically industrial area absent the Exide Facility or other secondary lead smelter, and a sizable rail yard with intermodal facility and switching yard. The housing stock is similar in age, size and density to the assessment areas and was constructed on areas that were previously farmland." DTSC considers the lead found in soils at the background area to already be representative of contributions from LBP and nearby industrial sources. Therefore, based on the fact that soil concentrations in the Northern and Southern Assessment Areas are several times higher than the background area, a conclusion that past and present emissions from the Exide facility has contributed to elevated lead in soils found in the Northern and Southern Assessment Areas is valid. DTSC will not approve of a revised work plan should it propose LBP survey work; this activity is outside DTSC's directive to evaluate the extent of lead in soils at the residences. Further, Exide cannot represent to property owners and residents that any LBP survey or inspection Exide may perform are pursuant to DTSC directives or requirements.



Response: DTSC intermixes two separate issues in this comment: the adequacy of the background area that was sampled and Exide's proposal to perform lead based paint testing on the 39 properties in the Northern and Southern Assessment Areas where extensive discrete sampling is to be performed. This response addresses the two issues separately. In addition, we are providing information regarding other industrial sources of lead in the vicinity of the Northern and Southern Assessment Areas that need to be considered when evaluating the results of the residential soil lead sampling.

Selection of the Background Area

DTSC repeatedly states that the background area is one that Exide and its technical consultants selected because it is included in the November 2013 Work Plan. This position is incorrect as DTSC selected the background area after DTSC turned down Exide's originally proposed background area located 1.2 miles northwest of the facility, which appeared to be more representative. DTSC stated that their denial was based on the fact that the proposed background area was located between the 0.5 and 1.0 Chronic Hazard Index isopleth developed during the risk assessment completed by ENVIRON as part of air modeling activities.

Although Exide specifically advised DTSC that it disagreed with DTSC's reasoning for denial of the originally proposed background area, in the interest of keeping the project moving forward, Exide proposed 2 alternate locations based upon a preliminary analysis and asked that DTSC select the background location they prefer. DTSC eventually issued an email dated November 12, 2013 selecting the Long Beach location as the background area. Exide finalized and issued the November 13, 2013 Soil Sampling Work Plan within 24 hours of receiving DTSC's decision on the background area.

When the Long Beach background area was proposed as an alternative (though not the best option), it was believed, based on limited available information at the time, to be sufficiently similar to the Vernon residential areas regarding proximity to highways, railroad facilities, nearby industrial operations and age of housing stock, to provide a suitable representation of background. Unfortunately, further analysis and evaluation of specific information for both the background area and the residential areas indicates that Long Beach is not an appropriate background area. While Exide is committed to moving this project forward quickly, good science mandates reevaluating the appropriateness of the background area.

Exide has raised the inappropriateness of proceeding with the Long Beach residential area as the "background area" for direct comparison to the northern and southern residential areas with the DTSC on several occasions. In the Off-Site Soil Sampling Report (Advanced GeoServices, February 28, 2014) and again in Exide's April 11, 2014 response to DTSC's April 4, 2014 comment letter on the Off-Site Soil Sampling Report, Exide provided DTSC with the technical



information necessary to evaluate our conclusion and spawn further conversation. However, in its April 4, 2014 and April 23, 2014 comment letters DTSC failed to respond except to point to apparent similarities between the areas based upon preliminary, general information and to note that Exide initially proposed the location.

We request that DTSC complete an objective review of the technical information that demonstrates that the Long Beach residential area is not an appropriate background area for the Northern and Southern Assessment Areas. Comprehensive information obtained in the course of this investigation about the areas demonstrates that the areas are not appropriate for comparison and do not support the DTSC's apparent decision that all soil lead concentrations above 80 mg/kg should be attributed to the Exide facility.

Inclusion of Lead-based Paint Inspections in the Work Plan Addendum

As stated above, our initial expectation was that the age, density and style of housing in the background area and Northern and Southern Assessment Areas were relatively similar. This initial conclusion was based on a review of aerial photographs from the 1950s showing the houses in both areas. During implementation of the soil sampling Work Plan, property records were reviewed to obtain the date when each property was developed. The results of that review determined that the first house on properties sampled in the Northern Assessment Area was constructed in 1910, and the median date of construction was 1923, while the first house on sampled properties in the Southern Assessment Area was constructed in 1921 with a median date of construction of 1937. By comparison, the first house on sampled properties in the Long Beach residential area was built in 1929, and the median date of construction was 1950.

This disparity in age is significant for multiple reasons. The first and foremost reason is the simple fact that the typical house in the Northern and Southern Assessment Areas are 27 years and 13 years older than the typical house in the background area. This means a greater amount of time when the potential existed for lead based paint to weather and decay, contributing lead to soil.

The second and less obvious reason relates to the quality and lead content of the paint itself. Specifically, the amount of lead utilized in paint began decreasing in the 1940s while at the same time the weather resistance and durability of non-lead based paint improved. The paint utilized in 1920s and 1930s contained higher amounts of lead than paint produced in the 1950s and 1960s; in fact, in prior to World War II, the U.S. Department of Commerce required that paint contain at least 45% (i.e. a concentration of 450,000 mg/kg lead) lead pigment to be labeled and sold as "Lead Paint". By the 1950s, most interior house paints were actually lead free (<1% lead pigment, i.e. less than 10,000 mg/kg). By 1978, the Consumer Products Safety Commission (CPSC) limited the amount of lead in



residential paint to 0.06% (i.e. a concentration less than 600 mg/kg.) (Sherwin-Williams, 2011; Clickner and Rogers, 1993)

Collectively, these facts mean that the paint used on homes in the Northern and Southern Assessment Areas before the Long Beach background area was even built contained greater amounts of lead. In addition, when considered relative to the end of the use of lead pigment in residential paints (1978), the Northern and Southern Assessment Areas would have been painted and repainted with lead based paint over a period of 55 and 48 years, respectively while the exterior of the typical home in the Long Beach Background Area would have been painted and repainted with paint that contained much less lead over only 28 years.

The importance of including lead based paint testing here is demonstrated by the results of laboratory analysis of paint chips taken from the ground surface at one of the two properties that were recently sampled in preparation for soil removal under the Interim Measures. The lead concentration of the paint chips was 63,700 mg/kg. It is both scientifically improper and a disservice to the community to not consider the impact of such a high concentration of lead directly on the soils being sampled. Moreover, it is inappropriate to attribute any exceedance of the 80 mg/kg soil screening value to a facility that is almost a mile away without consideration of lead based paint on the properties.

Other industrial sources of lead in the vicinity of the sampled areas

DTSC has essentially taken the position that all lead in excess of the Long Beach background concentration is attributable to Exide. This position fails to account for the complexities of dealing with a 100+ year old urban industrial setting. Between submission of the Off-Site Soil Sampling Plan (November 14, 2013) and submission of this response, Advanced GeoServices conducted a review of Sanborn Maps (primarily from 1928, 1950 and 1968) for facilities located within 1.5 miles of the Northern and Southern Residential Areas, the Exide Facility and the Long Beach background area that represent potential sources of lead emission.

A list of approximately 213 industrial operations involving producing or handling products with lead including smelters, foundries, oxide manufacturers, pigment manufacturers, paint and varnish manufacturers, metals recycling, chemical, fertilizer and rubber manufacturers was obtained for the Northern and Southern Residential Areas using the Sanborn Maps as shown on the attached Figure 1. This list includes facilities that may have been contributors to elevated lead levels in the two assessment areas. All manufacturers, facilities and areas appeared on one or more years of the Sanborn Maps received. For the specific year of the facility, see Table 1. Notably, the Sanborn Maps revealed the following information about the Northern and Southern Assessment Areas:

- A total of 22 paint manufactures were found using the Sanborn Maps, 1 fell within ½-mile, 8 fell within 1-mile, and 16 fell within 1.5-miles of the



Northern Assessment Area. One fell within ½-mile, 3 fell within 1-mile and 9 fell within 1.5-miles of the Southern Assessment Area. Paint manufacturing involved handling and mixing of white lead pigments that could contain up to 80% lead.

- A total of 94 metal foundries (including multiple brass and bronze foundries) and manufacturers were found using the Sanborn Maps. These include 3 that fell within ½-mile (including a tin can manufacturing facility with 6 solder pots immediately across the street from the Northern Assessment Area), 30 fell within 1-mile and 43 fell within 1.5-miles of the Northern Assessment Area. Eight (8) fell within ½-mile, 35 fell within 1-mile and 46 fell within 1.5-miles of the Southern Assessment Area.
- A total of 67 facilities and areas related to metals (junk yard, scrap yard, salvage yard) were found using the Sanborn Maps. These included 7 that fell within ½-mile, 23 within 1-mile and 33 within 1.5-miles of the Northern Assessment Area, while 1 fell within a ½-mile, 18 within 1-mile and 31 within 1.5-miles of the Southern Assessment Area.
- A total of 10 other facilities including large chemical, fertilizer and rubber manufactures were found using the Sanborn Maps. Of those 3 fell within a mile and 11 fell within 1.5-miles of the Northern Assessment Area, and 3 fell within ½-mile, 9 fell within 1-mile and 16 fell within 1.5-miles of the Southern Assessment Area.

By comparison, the review of Sanborn maps (1920s) and historical aerals (1952, 1972 and 1980) from NETR online (www.historicalaerials.com), from 1952, 1972 and 1980 for the background area shows a very different picture. See attached Figure 2. The only notable industry within a two-mile radius is Pan American Petroleum Co located south west of the sampling area. However, the refinery is over 0.5 to 1 mile from the sampling area. Based on the aerial photographs, the surrounding two miles from the background sampling area appears to be very rural and contain multiple farm lands and residential properties.

As evidenced through the disparity in historic manufacturing operations involving lead and other metals between the Northern and Southern Assessment Areas and the Long Beach background area, the average lead concentration observed in the Long Beach residential properties do not represent a suitable background area. In addition to the disparity in industrial operations, it was also determined that the intermodal rail facility south of the Long Beach area is less than 35 years old while the very large rail yard, as well as other smaller rail yards in the Vernon area have been in operation for over 100 years.

DTSC's statement that *DTSC considers the lead found in soils in the background area to already be representative of contributions from LBP and nearby industrial sources* is not supportable in light of the key disparities between the



background area and the Assessment Areas. This, along with DTSC's refusal to consider lead-based paint inspections to assess contributions from sources directly on the property, shows DTSC's predisposition to blame Exide for all lead encountered in whatever location is sampled.

The provision for lead-based paint inspection remains in the revised Addendum.

Comment: **RE: Response to DTSC Comment B - In regards to Exide's response to Comment B, DTSC was clear in its March 10, 2014 letter, that Exide is to "Delineate concentrations of lead above 80 mg/kg both vertically and horizontally in areas outward to at least double the sample areas of the Northern and Southern Assessment Areas. A work plan for this effort should include, but not be limited to discrete sampling at a representative number of residences." Our requirement on this issue has not changed. All soil samples are to be analyzed as discrete samples.**

Response: Exide respectfully disagrees with DTSC's directive to perform discrete sampling at the residential properties in the expanded sampling area. GSU comment #4 states that a minimum of 15 locations are to be sampled at each property with 5 depth intervals for a minimum of 75 samples per property. With the 39 locations added by DTSC, this brings the number of residential properties to be sampled to 144 with an unknown number of schools and parks with children's play area located within the expanded sampling area. This approach results in almost 12,000 samples to be collected and analyzed in the expanded sampling area. This is in addition to the 3000 samples that Exide has already agreed to collect within the initial Assessment Areas. This massive data collection effort is unwieldy, unnecessary and inconsistent with the approaches taken at similar sites throughout the country. As we have already seen with the results from the two properties that were sampled in this way, the data raise more questions than they answer, particularly when the data obtained to date do not demonstrate that the observed soil lead concentrations are attributable to Exide operations.

Five-point composite sampling has long been the preferred method to assess lead exposure in residential areas because it is an efficient way to characterize the lead concentrations at a property and obtain results that are directly comparable to a risk based cleanup value. It is the selected method for sampling soils in the *Superfund Lead Contaminated Residential Sites Handbook* (EPA, 2003) and has been used in every major lead study of residential areas for over 25 years. At the Omaha Lead Site, which is probably the largest residential soil cleanup based on soil lead in the country, composite sampling was used exclusively from the remedial investigation through completion of the remedy. DTSC's position is contrary to EPA guidance and the procedures utilized at residential lead sites throughout the country. The reason for this position has not been defined in DTSC comments to date.



Comment: **RE: Response to DTSC Comment C** - DTSC finds the response partially acceptable; however, DTSC considers the sampling of schools and parks for lead to be essential. DTSC understands that access agreements can be difficult; but omitting sampling shall not be based on the timing of acquiring access agreements from school and park districts. A report that is submitted without sample data from schools and parks will be considered by this Department to be preliminary and not a final work product. If Exide cannot obtain access from the school or park districts for this sampling, it must provide written documentation to DTSC to substantiate the access denial.

Response: Exide will use its best efforts to obtain access in a timely manner for public and private K-12 schools and parks with children's play areas and will notify DTSC if it is unable to do so.

DTSC states that Exide's responses to Geological Services Unit (GSU) memorandum dated April 3, 2014; Exide's responses to GSU Comments Nos. 1, 5, 6, and 7 are acceptable, while its responses to GSU Comments 2, 3, 4 and 8 are not.

Comment: **RE: GSU Comment 2** - DTSC disagrees with Exide's response that "there was no statistically significant difference" between the sieved versus unsieved data. According to technical review by DTSC's GSU, Exide's response omits several facts:

- The average lead concentration in soil in the Northern Assessment Area is more than two times greater than the background average concentration. Based on the data, we conclude that this is not due to normal fluctuations or random chance.
- The r-squared value for the background area was very close to 1 (0.98 according to our calculations). This suggests a strong positive relationship between the two data sets as compared to a significantly weaker 0.54 r-squared (again, based on our calculations) value ('moderately-positive') for the Northern Assessment Area. Even if Exide's r-squared result is correct (0.74) for the Northern Area, we believe that there is still enough difference between the two areas to warrant sieving. Our analysis, which was probably conducted in a manner similar to Exide's, did not include outliers and influential points, such as the 2,030 mg/kg lead detection at one of the homes, because Exide did not sieve this sample. Therefore, no statistical comparison is possible.
- The Exide Facility has operated almost continuously at the same location for over 80 years; more than any other currently operating lead-acid battery breaker/secondary-lead smelter. On several occasions, lead and arsenic above hazardous-waste levels have been detected both on and off-site of the Exide Facility.



- **There are decreasing lead concentrations outward from the Exide Facility to these homes.**

All of the above are individual lines of evidence pointing to Exide as the main source for the particulate lead.

However, DTSC agrees with Exide's proposal to conduct sieving at 20% of the previously sampled residential properties in the Northern and Southern Assessment Areas. DTSC also agrees with Exide's proposal to sieve 10% of the soil sampled in the expanded sampling areas. DTSC does not concur with Exide's proposal to not sieve soil samples collected from any schools or playgrounds. Soils shall be sieved at 20% of the samples collected from these sensitive areas.

Response: DTSC cites four "lines of evidence" to conclude that Exide is the main source of lead in the residential areas. Responses to each of these statements follow:

The average lead concentration in soil in the Northern Assessment Area is more than two times greater than the background average concentration. Based on the data, we conclude that this is not due to normal fluctuations or random chance.

Exide agrees with DTSC on the first sentence of this statement; however, DTSC does not provide any analysis to support its second sentence that the difference between the Northern Assessment Area and the background area is not due to normal fluctuations or random chance. In fact, published data contradicts DTSC's statement. A large study of soil lead in the Los Angeles area found that the mean soil lead concentration for 550 samples was 181 mg/kg overall while the means for samples within 300 m of freeways or major arterials were 189 mg/kg and 224 mg/kg, respectively ("Spatial analysis of bioavailable soil lead concentrations in Los Angeles, California", Environmental Research 110, (2010) pp. 309-317) placing the Northern Assessment Area mean concentration of 175 mg/kg within the range expected for the Los Angeles area.

The r-squared value for the background area was very close to 1 (0.98 according to our calculations). This suggests a strong positive relationship between the two data sets as compared to a significantly weaker 0.54 r-squared (again, based on our calculations) value ('moderately-positive') for the Northern Assessment Area. Even if Exide's r-squared result is correct (0.74) for the Northern Area, we believe that there is still enough difference between the two areas to warrant sieving. Our analysis, which was probably conducted in a manner similar to Exide's, did not include outliers and influential points, such as the 2,030 mg/kg lead detection at one of the homes, because Exide did not sieve this sample. Therefore, no statistical comparison is possible.



DTSC has not provided an alternative statistical analysis to the hypothesis testing that Exide performed to support its disagreement with the conclusion that there is not a statistically significant difference between the sieved and unsieved results. Regression analysis comparing two sets of data does not support this conclusion; it only shows whether there is a relationship between the data sets. The fact that a relationship exists between sieved and unsieved results and the relationship is stronger or weaker in different areas does not say anything about whether there is a statistically significant difference between the two sets of results. The statistical comparison is still valid even without including an outlier like the 2030 mg/kg. The whole purpose of running outlier tests is to see if they would have an unacceptable impact on statistical tests. DTSC's statement that no statistical comparison is possible because an outlier was not included is not consistent with good scientific practice. Please provide the analysis that shows there is a statistically significant difference between sieved and unsieved data that justifies DTSC's stated position.

The Exide Facility has operated almost continuously at the same location for over 80 years; more than any other currently operating lead-acid battery breaker/secondary-lead smelter. On several occasions, lead and arsenic above hazardous-waste levels have been detected both on and off-site of the Exide Facility.

It is a true statement that a secondary lead recycling facility has operated at this location for over 80 years. It is also true that lead levels have been detected above 1000 mg/kg off-site close to the facility. However, those statements do not support DTSC's conclusion that Exide is the primary source of the lead in residential areas almost one mile away. The dust sampling performed by ENVIRON at the same time that the detections above 1000 mg/kg were made demonstrates that the contributions to soil lead from the measured dust concentrations at a distance of 4500 feet from the facility are miniscule, below the measurement ability of the analytical laboratory. The mere fact that lead and arsenic have been detected at elevated levels near the property does not support the DTSC's conclusion that Exide is solely or even primarily responsible for emissions nearly one mile away, particularly in light of the existing data showing that dust concentrations are unlikely to travel that far from the facility.

There are decreasing lead concentrations outward from the Exide Facility to these homes.

The February 18, 2014 report shows that there is no relationship between residential soil lead results and distance from the facility. Instead, such a correlation can only be made if sample results in close proximity to the facility are included. As with the previous "line of evidence", simply because there were lead levels above 1000 mg/kg in close proximity to the facility does not make the facility responsible for the soil lead levels detected in the Assessment Areas.



In summary, none of DTSC's "lines of evidence" are scientifically supported statements, and DTSC has not provided any independent analysis to justify its conclusion that Exide is the main source of particulate lead in the residential areas in spite of evidence to the contrary.

Notwithstanding these objections, sieving of the soil samples as per DTSC's comment has been incorporated into the revised Addendum.

Comment: **RE: GSU Comment 3** - As stated above, LBP inspections are not part of DTSC's required work plan from Exide. DTSC believes that LBP may be found on the exterior of residential homes built before 1979, but disagrees with Exide that LBP is mainly responsible for the elevated lead levels detected in the yards. Additionally, Exide did not provide a response to DTSC's recommendation to use lead fingerprinting techniques. Such fingerprinting techniques would provide a much more reasonable, robust, and defensible evaluation of the lead in the soils than a LBP study. It is also likely to be less intrusive to the property owner and residents, and serve as a valid scientific method to determine a possible source or sources of the lead in the soils in the surrounding communities.

Response: Please see the response to DTSC Comment A regarding lead based paint. Exide also is requesting that DTSC provide specific information regarding the reasonable, robust and defensible fingerprinting technique that DTSC is referring to in its comment so that its inclusion in the Addendum can be considered.

Comment: **RE: GSU Comment 4** - To make abundantly clear, DTSC is requesting, 4 drip-line soil sample locations and one down-spout soil sample location, in addition to the 10 soil sample locations out in the yard areas, for a total of 15 soil sample locations per residence. DTSC does not concur with Exide's request to continue collecting composite samples. Homogenization and compositing soil samples per sample depth interval were acceptable for the initial screening. However, the initial screening suggests that lead dust has contaminated the yards of the homes in the Northern and Southern Assessment Areas. DTSC wants to avoid any situation that could lead to doubt in the overall quality of the data and the representativeness of the actual soil sample. Therefore, DTSC requires discrete soil sampling for this next phase of work.

Response: As stated previously, Exide does not agree to perform discrete sampling outside of the initial Assessment Areas. Discrete sampling is proposed for the 39 properties that were previously sampled as per DTSC's comments. The revised Addendum calls for composite sampling in the expanded sampling areas.

Comment: **RE: GSU Comment 8** - DTSC disagrees with Exide's proposal to not collect drip-line samples if pavement is encountered next to a house. Sample locations should be placed in the nearest unpaved areas where associated



runoff may collect. Exide shall collect drip-line soil samples even if pavement occurs next to a house, providing that the pavement is not extensive (e.g., part of a driveway that extends up to the house), absent DTSC's approval to eliminate this requirement on a per residence basis. This will have to be evaluated on a case-by-case basis by the DTSC in the field.

Response: The revised Addendum calls for sampling of the drip zone on each side of the main structure on the property unless extensive pavement such as a parking area or driveway extends to the house for the 39 properties that were sampled in the initial Assessment Areas. No drip zone sampling is included in the expanded soil sampling area.

TABLE 1
Sanborn Investigation
Summary Table of Lead and Other Metal Contributors

ID Number	Name	Description	Location	Year
1	Metal Fabricating	Metal fabricator and scrap yard, current scrap yard	1737 E. 24th St.	1968
2	Aaron Ferrer and Sons Inc	Former Foundry (large) (today Catame Inc. zippers)/Former Berg Metal Corp	3200 Long Beach Ave.	1968
3	Aluminum and Brass Foundry	aluminum and brass foundry, current CTD Machines and watchmaker	1920 Imperial St.	1950
4	Paint Mfg	Walter Boysen Co. (Currently Edmund A. Gray Co. (pipe manufacturer))	1946 Imperial St.	1950
5	Steel Warehouse	steel warehouse and sheet metal shop, current parking and off ramp	2168 E. Olympic Blvd.	1950
6	Lead Smelter and Foundry	Unnamed (single furnace and kettle)	2182 E. 11th St.	1950
7	Smelter and Foundry		2201 E. 11th St.	1950
8	Scrap Metal Junk Yard	Scrap Metal Entire Yard, current CTD Machines	1901 Imperial St.	1950
9	Scrap Metal Storage Yard	metal scrap yard, recycling and scrap yard	2034 E. 15th St.	1950
10	Scrap Metal Yard	2 scrap metal yards (e and W sides of St), current parking and unoccupied	1918 Mateo St.	1950
11	Hercules Foundries Inc	V. large foundry (missing 1950 and 1968 maps), current slauson distribution center (mult. Co.)	3152 E. Slauson Ave	1928
13	Axelson Machine Co	Machine Shop w/ large foundry (Only had 1928 map), current slauson dist center (mult co)	6160 S. State St	1928
14	Warman Steel Casting Co.	Very large Foundry (Only had 1928 map), current slauson dist center (mult. Co)	6100 S. State St	1928
15	Electric Foundry	Foundry (Only had 1928 map), current food wholesale/warehouse	3334 E. Slauson Ave.	1928
16	Southern California Iron and Steel Co	Forge Shop, Open Hearth Bldg (VV Large Operation)	3378 Slauson Ave.	1928
17	Vulcan Detinning	Med Sized operation, current DK Environmental	3650 East 26th St.	1968
18	Brake Lining Mfg	w/ Brass Pipe and Fitting Warehouse, current various warehouses	1467 Grande Vista Ave	1968
19	Brass Foundry (Barrios Castings)	small to mid sized brass foundry (Still Active)	1459 S Lorena St.	1968, 1950
20	Foundry	Not present in 1928 Appliance operation by 1968, current Gaia Enterprise Inc (clothing)	1443 S. Lorena St.	1950
21	Foundry	Foundry present in 1950 map gone in 1968, current law office Jeff Holmes esq.	3307 E. Pico Blvd	1950
23	Iron Works and Foundry	Active 1950 Vacant 1968 (small operation), current art studio Peter Shelton	1422 S. Concord St.	1950
25	Sheet Metal Shop	sheet metal fab and welding, current liquor and wholesale fabric	3200 Mines Ave	1950
26	Welding and Metal Works	Metals Fabricating/Welding and Metals Work	3214 Mines Ave	1950
27	Consolidated Paint Co	Med size paint Mfg, current Auto Repair and sales	3100 E. Olympic Blvd	1968, 1950
28	Continental Can Co. Inc	Bond Crown and Cork Division/Bottle Cap Mfg, current textile printing	3101 E. 12th St	1968, 1950
30	Asphalt Plant	Scrap Metal Near, 1928 blacksmith shop, current sand gravel and asphalt processing	2727 E. Washington Blvd	1968, 1950
33	Old Battery Storage	North of Asphalt Plant	2727 E. Washington Blvd	1950
34	Paul G Wagner Co	Metal Mfg, Paint Storage, Paint Mfg, Machine Shop, current Ace Paper Co.	2865 E Washington blvd	1950
35	Paint Mfg (Aluminum Treatment)	Paint Shop, Salt Bath	2835 E Washington blvd	1968, 1950
37	Steel Treatment Shop	Fabricating and heat treating	2807 E Washington blvd	1968, 1950
38	Scrap Storage Yard	w/shipping, current preferred freezer services warehouse	3095 E. Washington Blvd	1968, 1950
40	Paint Mfg	small paint mfg and warehouse, current lichts dev corp	1523 Grande Vista Ave	1968, 1950
41	Acme White Lead and Color Works	Paint Mixing becomes Sherwin Williams, current *Ellis Paint Co*	3150 E. Pico Blvd.	1928
42	Sherwin Williams	Paint Warehouse/Mixing and Mfg	1523 S. Grande Vista Ave	1968, 1950
43	Varnish and Paint Storage and Mfgs	paint warehouse	1529 S. Grande Vista Ave.	1968
44	Electro Plating	electro plating, current Yolanda's Plating	3419 Union Pacific Ave	1968
45	Foundry	current Matthew's Manufacturing bronzeway plating and powder coating	3320 E. 14th St.	1968
46	Foundry	current Matthew's Manufacturing bronzeway plating and powder coating	3321 Union Pacific Ave	1968
47	Metal Melting	scrap metal melting, current Certified Enameling	3400 Emery St.	1968
48	Paint Manufacturing	current owned by Bronzeway Plating Co	3433 Emery St.	1968, 1950
49	Tin Shop/AC Mfg		3325 E. 14th street	1968
51	Steel Fabrications in Yard	current Certified Enameling	3351 Emery St.	1950
52	Steel Warehouse and Shop	steel warehouse and shop, current Bronzeway Powder Coating	3341 E. 22nd St.	1950
54	Zolatone Paint	Drum Storage, Mixing, Paint Storage, current Bronzeway Powder Coating	3431 E. 15th St.	1968
55	Air horns, pump, valves mfg	current Grover Co. Auto accessory supplier	3424 E. Olympic Blvd.	1968
56	Aluminum Foundry	aluminum foundry, current King Taco	3421 E. 14th St.	1950
57	Iron Foundry	iron foundry, current SSS chemical	1461 Boyne St.	1950
58	Benmatt Industires/Shehan Mfg Co, Metal Stamping	Die Casting, metal stamping	1471 Boyne St.	1968, 1950, 1928
59	Bronze Plating and Builders Hardware	bronze plating, current Henry's Metal Polishing Works	3445 Union Pacific Ave.	1968
60	Electro Plating	current Triple S chemical	3464 Union Pacific Ave.	1968
61	Metal Fabrating	current Christy Sewing	3423 E. Pico Blvd.	1968
62	Paint Mixing and Storage Yard	current Alsa Corp paints	3437 E. 15th St.	1968
63	Aluminum Foundry		3451 E Pico blvd	1950
64	Auto Wheel and Parts Mfg/Sheet Metal Shop		3499 E 15th St.	1968, 1950
65	Brass Works and Harow Mfg, Foundry		3474 Union Pacific Ave.	1968, 1950
67	Electro Plating		3436 E. Olympic Blvd.	1968, 1950
69	Metal Finishing		1415 Esperanza St.	1968
70	Metal Stamping, Ball Bearings Mfg		1455 Esperanza St.	1968, 1950
71	Metal Treating	Plastic and Metal Polishing	3550 E. Pico	1968
72	Plating Works	w/ machine shop	3498 E. 14th St.	1968

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ID Number	Name	Description	Location	Year
74	General Cable Corp	Mfg and Rolling Copper Cable (Shipping Reel and Battery Charging)	3600 E. Olympic Blvd.	1968, 1950
77	O'Keefe and Marritt Co	Mfg Sheet Metal Stoves and Heaters Factory (Foundry)	3700 E. Olympic Blvd.	1968, 1928
78	Welding		4010 E. Olympic Blvd.	1968
79	Machinery Storage and Die Cutting		1278 S. Townsend Ave.	1968
80	Sheet Metal Shop	and welding	1307 S Eastman Ave.	1950
81	Metal Products Mfg		1209 S. Record Ave.	1950
86	Paint Manufacturing	w/ steel paint drum storage in yard	1531 Esperanza St.	1968, 1950
88	The Ceco Corp	Steel Products Corp (Steel and Wire warehouse and cutting and bending)	1450 Mirasol St.	1968, 1950
89	Southern California Refinishing Services Inc	Electric Appliance Refinishing	3674 Noaks	1968
90	Steel Tube Warehouse	Welds Supplies Mfg	1520 Calzona	1968, 1950
91	Continental Can Co. Inc	Manufacture Metal Cans	3820 Union Pacific Ave.	1968, 1950
92	Kaiser Aluminum	Foil Craft Division/Aluminum Foil Mfg	1345 S. Herbert Ave.	1968
97	General AC Corp	Sheet Metal Shop	1505 S Eastern Ave	1950
98	Galvanizing Plant	With Plating Works	2709 Soto St.	1950
100	Stainless Steel Sheet and Tube Polishing		4450 Dunham St.	1968
104	Quality Foundry	current Stericycle	2707 E 26th St	1968, 1950, 1928
105	Metal Products Mfg and Weld	w/ Metal Working	2865 E. 26th st	1950
106	Metal Storage Yard	w/ machine shops (iron)	2820 Lugo St.	1968
107	Scrap Metal Yard		1810 Soto St.	1968
109	National Lead Company	Warehouses and Paint Mfg Buildings	3107 E 26th St	1968, 1950
111	West Coast Kalsomine Co, Frank D Davis, WESCO Waterpaints	Paint and Paste Plant	3259 E. 26th St.	1968, 1950, 1928
115	Butane Tank Co	Steel Butane and Propane Tank Mfg, contains a sheet steel and tank storage yard	3185 E. Washington Blvd	1968, 1950
116	Empty Can Storage Yard		1732 Industrial Way	1968
117	Junk Yard	Yard also contains empty can storage and metal storage and shipping building	1706 Grande Vista Ave.	1968
118	Magnesium and Aluminum Foundry	Becomes a metal tube warehouse and furniture mfg on 1968 map	3501 E. 26th St.	1950
119	Aluminum Heat Treating	Has a metal Storage Yard surrounding the building	1761 Industrial Way	1968
122	Aluminum Trailer and Truck Body Mfg		2580 S. Downey Rd	1950
123	Steel Fabricating		3424 Emery St.	1950
124	Brass Products Manufacturer	Contains welding equipment	3536 Emery St.	1968
125	Scrap Metal Yard		3500 Emery St.	1968, 1950
126	Sinclair Paints, General Paint Corp, LS Finch Corp	Paint Mfg, current parking lot	3854 E. Washington Blvd.	1968, 1950, 1928
129	National Can Corporation, Pacific Can Co	Operates Baghouse Daily, Tin Smelter, Manufactures Cans (Food Type)	4214 E. 26th St.	1968, 1950
130	Reliance Universal/Trojan Lacquier Co	Lacquier Storage and Paint Mfg	4090 E. Washington Blvd.	1968, 1950
131	Western Specialty Coatings	Automotive Paint mfg	4400 E. Washington Blvd.	1968
132	Metal and Paint	Multiple Small Metal and Paint mfg. Related Shops (Welding, Coil Springs Mfg, Tool Warehouse, etc)	4180 E. Washington Blvd.	1968
134	Arrow Mill Co	Battery Separator Mfg and Milling	2440 Arrowmill Ave.	1968, 1950
135	Copper and Steel Pipes and Fittings		4450 E. Washington Blvd.	1968
137	Lead Products Warehouse/Casting	Extrusions and Lead Castings/Gunite	4504 E. Washington Blvd.	1968, 1950
138	Powdered Lead and Oxide Mfg		4530 Pacific Way	1950
139	Stauffer Chemical	Manufactures Herbicides for Corn	3200 E. 26th St.	1950
140	Filtrol Corp	Mfrs of Ammonia Sulfate, Magnesium and Aluminum Oxide	3500 E. 26th St.	1968, 1950
141	Metal Fabricating	Steel Fab and alloy forgings, pipe mfg, conveyor mfg	2618 Downey Rd.	1968
142	Metal Fabricats and Conveyor Mfg		2646 Downey Rd.	1968
143	American Potash and Chemical Corp, Easton Chemical Inc	Chemical Smelting, current Pacific Coast Tire	3056 Bandini Blvd	1968, 1950
144	Vernon Paving Co	Foundry on Premise	3300 Bandini Blvd.	1950
145	Triangle Steel And Supply	Fabricated Steel Products Steel Warehouse/Metal Products Warehouse	3700 E. 26th St	1968, 1950
146	Lily Foundry	Foundry, current parking for BNSF Railway	3960 E. 26th St.	1928
147	Metal Milk Crate Mfg	Iron (H. Muhlsetein scrap Rubber and plastic storage a plastic and rubber mfg company)	3718 E. 26th St.	1968
148	Abandoned Foundry/Pioneer Aluminum	current Kehrig Pacific Co.	3800 E. 26th St	1928/1968
149	Morris P Kirk and Son	Lead Smelting, Blue Lead Dept Bldg, Aluminum Smelter, Battery Separation Plant, Other Metal Handling (EXIDE)	2700 South Indiana St	1968, 1950, 1928
150	Federated Metals	American Smelting and Refining Co (Operating since pre-1946 based on Metals Industry Publications)	4010 E. 26th St.	1968
151	Fertilizer Mfg		4215 Bandini blvd.	1928
153	Metal Fabricating	Unnamed small)	1732 E. 23rd St.	1968
154	Bronze Way Powder Coating	Active Bronze coating facilitiy	3301 E. 14th St.	
156	Foundry		3330 Bandinin Blvd	1950
157	Inland Fertilizer Co		4130 Bandini Blvd	1966, 1949, 1929
158	West Coast Fertilizer and Rendering Co		4120 Bandini Blvd	1966
159	Baker commodities Inc	Recycling Facility	4125 Bandini Blvd	1966
160	Joseph T Ryerson and Son Inc	Wholesale Aluminum rods, bars And steel	4310 Bandini Blvd	1966
161	Parco Inc	Fertilizer Sarehouse	3818 Bandin Blvd	1966

TABLE 1
Sanborn Investigation
Summary Table of Lead and Other Metal Contributors

ID Number	Name	Description	Location	Year
162	Bandini Fertilizer Co		4138 Bandini Blvd	1950
163	American Fertilizer Co		4073 Bandini Blvd	1950
164	California Sun Fertilizer Co		4055 Bandini Bvd	1950
165	Structural Steel Fabricating	Tin Smelter	2713 Bonnie Beach	1968
168	Scrap Metal Storage Yard		1646 Imperial	1970, 1967, 1960, 1954, 1953, 1950
169	Brass Foundry	Small Operation located near other foundries and metal manufacturing shops.	2330 11th Street	1970, 1967, 1960, 1954, 1953, 1950
174	Crown Body and Coach Corpn	Metals and Auto Body Painting/ School Bus and Fire Truck Mfg Closed in 1991		1970, 1967, 1960, 1959, 1954, 1953, 1950
175	Metal Working		1367 Wilson	1970, 1967, 1960, 1959, 1954, 1953, 1950
176	Tin Shop		1339 Wilson	1970, 1967
178	Rubber Mills		1405 Mateo	1954, 1953, 1950
180	Commercial Iron Works	Foundry	2430 Porter St	1970, 1967, 1960, 1959, 1954, 1953, 1950
182	Aluminum and Magnisium Heat Treating		2441 Olympic Blvd	1959, 1953, 1950
186	C&M Metals (Junk Yard)	C&M Metals (Still active)	1705 E. 24th St.	1970, 1968, 1963, 1960, 1954, 1953, 1949
187	Yard Full of Iron		1737 E 24th St	1970, 1968, 1963, 1960, 1954, 1953, 1949
196	Junk Yard		Geraldine St	1968, 1963, 1960, 1954, 1953, 1949
198	Los Angeles By-Products Co	Metal Scrap Storage Yard	1910 E 25th St	1970, 1968, 1967, 1963, 1960, 1955, 1953, 1949
199	Los Angeles Foundry Co		1910 E 25th St	1920
209	Dura Steel Products Co	w/ Machine Shop (Metal Fabricating) Paint storage onsite with 2 metal spray booths	1781 E 22nd St	1960, 1958, 1954, 1953, 1949
216	Metal Storage Yard with Wire Fence		3010 Leonis Blvd	1956, 1949
217	Standard Auto Body Corpn	Includes machine shops and Auto body mfg	4990 Soto St	1963, 1963, 1960, 1956, 1949
218	Los Angeles Paving co	Asphalt Mixing Unit	3600 Soto St	1963, 1960, 1956, 1949
220	Paint Mfg		3712 Soto St	1967, 1963
225	Industrial Manufactures Ltd Becomes norris Thermador Corpn	Manufactures of Wood Tanks and Furnaces (Mill Bldg, Glue Room, Steel Storage and PAINT dipping, machine shop) Appliance Mfgs	3052 E 54th St	1956, 1949
227	Metal Control Labatory		2795 E Slauson Ave	1967, 1963, 1960, 1956
228	Mobile Oil Company	Paint Working Building	2709 E 37th St	1967
230	Standard Steel Corp	Asphalt Paving and Refinery Equipment Mfg	5001 S Boyle Ave	1967, 1963, 1960, 1956, 1949
231	Reynolds Metals Co	Laminating Foil to Paper	3007 Fruitland Rd	1960, 1956, 1949
232	Fruehauf Trail Co of California	Spray Painting and Dryers Area	5137 S Boyle Ave	1963, 1960, 1956, 1949
232	Owens Brockway Glass Container	Glass container manufacturer Lead emissions = 60 lbs/year	2901 Fruitland Ave	Active
233	Norris Thermador Corp. Appliance Mfg.	Metal Stamping and Metal Goods Mfg (Aluminum Tank Dept, Spray and Dip Painting Metal Goods)	5215 S Boyle	1967, 1963, 1960, 1956, 1949
235	Salvage Storage Yard	Surrounding a Cranway Building	6200 S Soto	1963, 1960
236	Metal Drum Mfg		54th St	1967, 1963, 1960, 1956, 1949
237	Madsen Iron Works	w/ Foundry	5601 Bickett	1949
238	BBL Painting and Copperage Warehouse		5500 Soto	1967, 1963, 1960, 1956, 1949
239	Waukesha Motor Co	Engine Manufacturer	5522 Soto	1956, 1949
241	Levine Copperage Co/Myers Drum Co (Also see 251)		E 54th St between Soto and Bickett	1967, 1963, 1960, 1956, 1949
242	Pacific Pumps Inc	w/ Possible Foundry	5704 Bickett	1949
243	Pubco Corp	Bronze and Brass Foundry Becomes Republic Die Casting	2915 E Slauson	1956, 1949
245	Foundry and Welding	Scrap Metal Warehouse	5800 Soto	1949
248	Scrap Metal Storage Yard		Soto	1967, 1963, 1960, 1956
249	Western Forge and Mfg Co/ Aero Alloy	Foundry (Aluminum 1967) (Galvanizing 1967)	5615 S Boyle Ave	1967, 1963, 1960, 1956, 1949, 1920
250	General Metals Corpn	w/ Aluminum Foundry	5803 S Boyle Ave	1967, 1963, 1960, 1956, 1949, 1920
251	Pacific Pumps Inc	w/ Spray Painting		1967, 1963, 1960, 1956, 1949, 1920
252	Mahl Steel and Supply Co	Steel Products Mfg	3057 E Slauson	1967, 1963, 1960, 1956, 1949, 1920
257	Rubber Products Warehouse		2944 E 44th St	1960, 1956
258	US Rubber co	Tires and Rubber Products Warehouse	2801 E 46th St	1963, 1960, 1956
259	Rubber Products Sale and Warehouse		2850 E 46th St	1967, 1963, 1960, 1956
262	Brombacher Iron Works/Aluminum Co of America	With Machine and Building Shop/Steel Crane Runways (Magnesium Foudry (1949))	5585 Magnolia Ave (Alcoa)	1949, 1929
263	Baash-Ross Tool Co	becomes Aluminum Co of America on 1966, Multiple machine shops, building with heat treating	5512 S Boyle Ave	1966, 1949, 1929
264	Tube Mill	Heating and Treatment Bldg, Remelting Building, Extrusion Finishing Building	S Boyle and Frutland Ave	1966, 1949
265	Aluminum Company of America	Large Foundry, Magnesium Foundry, Melting/Heat Treatment Building	5221 Magnolia Ave (Alcoa)	1966, 1949
266	Kyle Steel Construction Co	Galvanizing Plant and Machine Shop with crane runway	5235 Magnolia Ave (Alcoa)	1949
267	United States Spring and Bumper Co	Standard Steel Corpn on 1966 - Steel warehouse fabricating and welding	3541 E 50th St	1966, 1949, 1929
268	Erle P Halliburton Inc	Aluminum Luggage Mfg	4724 S Boyle Ave	1966, 1949
269	American Manganese Steel Co	Foundry Becomes American Breakshoe Co of American Manganese Steel Co	5835 Downey Rd	1966, 1949, 1929
270	Magnetic Signal Co		3355 E Slauson Ave	1929
271	Modern Pattern and Foundry Co	w/ machine shop onsite	5610 Alcoa Ave (Magnolia)	1966, 1949
272	Foundry	Small Operation (Equipment Mfg) Near Meat Industries	3300 E 45th St	1949
274	Plomb/Proto Tool Mfg	w/ Drop Forge Shop becomes Proto Tool Co.	2313 Santa Fe Ave	1968, 1963, 1956, 1949

TABLE 1
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Summary Table of Lead and Other Metal Contributors

ID Number	Name	Description	Location	Year
275	Scrap Metal Yard		2050 E 25th St Lower	1968, 1963, 1956, 1949
276	Scrap Metal and Junk Yard	w/ scrap metal warehouse	2100 E 25th St	1956, 1949
277	Scrap Metal Warehouse		2171 E 25th St	1956, 1949
278	Fabricated Steel		2460 Butte	1968, 1963, 1956, 1949
279	KH Davis Wire and Cable Corp	Cable and Wire Mfg, Metal Spinning and Wire Products	2425 E 23rd St	1968, 1963, 1956, 1949
280	Crane Steel Co of California	Cold Rolled Ball Mill	2451 E 23rd St	1968, 1963, 1956, 1949
281	Machinery Tools and Sales	1956 a Scrap Metal Storage Yard and Machine Shop	2324 Santa Fe	1956, 1949
282	Brass and Aluminum Foundry	2 foundries with Heat Treating	2406 Santa Fe	1968, 1963, 1956, 1949
283	Columbia Varnish Co		2409 Minerva	1963, 1956, 1949
284	Junk Yard		2425 E 25th St	1968, 1963, 1956, 1949
285	Los Angeles Mfg Co/State Steel Products Inc	Sheet Iron Works	2515 Cheney (24th)	1949, 1920
286	Friedman and Lowith Iron Works/States Steel Products Inc		2610 Cheney (24th)	1920
289	City of Los Angeles Refuse Collection Division	Garbage Loading Platform	2601 E 25th St	1956, 1949
290	Burning Dump Pile	For Peterson Mfg Co (Tallow Crackling and Tankage Factory) Becomes a Drum Storage Yard		1968, 1963, 1956, 1949
291	City of Los Angeles Transportation East Yard	Refuse Collection Division (Refuse Trucks, Tires, Gasoline Pumps)	2649 Washington Blvd	1968, 1963, 1956
293	National Brass Works Inc	Foundry on Premise	2134 E 25th St	1968, 1963, 1956, 1949
300	Pike Trailer Co/Metal Chair Mfg	Steel Truck Chassis Building	2335A E 27th St	1968, 1963, 1956, 1949
301	Graham Iron Works	Foundry on Premise	2730 Santa Fe	1920
305	Steel Storage Yard		E 25th st	1968, 1963, 1956, 1949
306	United American Metals Corp	Lead Smelting	Minerva between 25th and 26th	1968, 1963, 1956, 1949
309	Reliance Steel Co	Sheet and Strip Division	2500 E 26th St	1968, 1963, 1956
311	Braun Specialties Inc	Aluminum Auto Body Mfg	4536 District Blvd	1926
313	The Great Atlantic & Pacific Tire Co	1966 Vernon Distribution and Warehouse Co (Auto Freight)	4587 Loma Vista	1966, 1949
315	Studebaker-Pacific Corp	Sheet Metal and Body Storage (Motor Assembly)	4530 Loma Vista Ave	1949
316	Studebaker-Pacific Corp	Automobile Warehouse	4641 District Blvd	1949
320	Rubber Products Warehouse (1st Floor)	Innersole Cutting Mfg (2nd Floor), Inner Sole Warehouse (3rd Floor)	4464 District Blvd	1966
321	Gaffers and Sattler Foundry		4580 E 49th St	1949, 1929
323	AJ Lynch and Co	Dry Paint Pigments warehouse and Mixing includes a Drill Room	4560 E 50th St	1966
324	Metal Products Mfg		4740 Corona Ave	1949
325	Metal Works		4880 Corona Av	1949
328	Foam Rubber and Furniture Warehouse		4717 District Blvd	1966
329	Joslyn Pacific Co	Galvanizing Plant and Machine Shop	Fruitland Ave and District Blvd	1966, 1949
330	Metal Fabricating and Warehouse	Steel Warehouse	4937 Frutland Ave	1966, 1949
332	Penn Metal Company	Metal Warehouse	4309 District Blvd	1966

	Lead
	Metal (Foundry/Manufacturer)
	Metal (Scrap Yard/Warehouse)
	Paint
	Other (Chemical/Rubber/Fertilizer)



NOTES:

NO LEAD OR METAL
CONTRIBUTORS IDENTIFIED
WITHIN 2 MILES OF THE
BACKGROUND AREA

AERIAL PHOTOGRAPH FROM
1972

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SANBORN INVESTIGATION
LEAD AND METAL CONTRIBUTORS
BACKGROUND AREA

PROJECT MANAGER:	PGS	SCALE:	NTS
CHECKED BY:	PGS	PROJECT NUMBER:	2013-3007-09
DRAWN BY:	KEZ	DATE:	04/30/2014

Figure